

TWO NEW LAND SNAILS OF THE
GENUS *OPISTHOSTOMA* FROM BORNEO
(PROSOBRANCHIA: CYCLOPHORACEA:
DIPLOMMATINIDAE)

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Abstract.—Two land snails, *Opisthostoma* (*O.*) *holzmarki* n. sp. and *O.* (*O.*) *brachyacrum* n. sp., are described from Sarawak, Borneo. These constitute the first records of the subgenus *Opisthostoma* for the island.

During 1976 Dr. Walter Auffenberg, of the Florida State Museum, visited Luzon Island to study varanid lizard ecology. He was accompanied during part of his trip by Mr. William I. Holzmark, from Sarasota, Florida. Subsequent to the completion of their work on Luzon Mr. Holzmark continued westward to Palawan Island and to Sarawak where he procured many interesting natural history specimens, including several undescribed land snails. Two of these are peculiar because of their extremely minute size and their distorted shapes. These are of special interest because they represent a subgenus, *Opisthostoma* (*s.s.*), which hitherto has been unrecorded from Borneo. I take pleasure in naming one of these after Mr. Holzmark in recognition for his efforts to assist in natural history studies on this and on other trips.

Opisthostoma (*O.*) *holzmarki*, new species
Fig. 1, A-E

Diagnosis.—A species of the subgenus *Opisthostoma* with a raised apex and abbreviate cylindrical shell, in which the last whorl reverses its direction of growth and ascends the spire so that the outer peristome encapsulates the apical whorls. A short longitudinal indentation occurs in the last whorl just beyond the constriction. The sculpture consists of sparse feeble axial ribs. Spiral sculpture is absent.

Shell.—Minute, less than 1 mm in height, and slightly more so in width. Nearly opaque, whitish. Narrowly umbilicate. The spire is abbreviate cylindrical and is partially covered by a strongly distorted last whorl. The spire consist of 4 whorls. The embryonic whorl lies at a plane slightly oblique to the shell axis. The apical 2 whorls are low and convex in outline and protrude above the third whorl for a distance about equal to the caliber of the third whorl. The body whorl (fourth whorl) is narrower but slightly larger in caliber and is constricted below the aperture. The body whorl reverses its direction of coil on the side of the shell and ascends

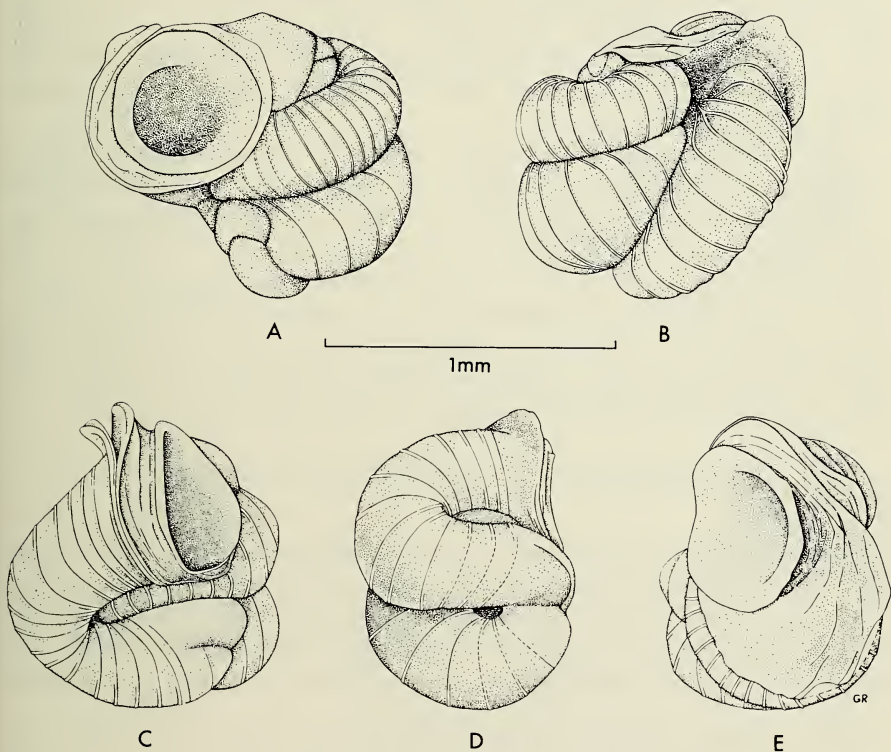


Fig. 1. *Opisthostoma holzmarki*. A, C, E, Holotype; B, Paratype (Sarawak Museum); E, Paratype (UF 24837).

the spire to the shoulder of the third whorl. The outer peristome continues over the apex by being appressed against the side and top of the first 3 whorls. At the point of constriction the body whorl bears a short narrow longitudinally impressed groove along the periphery. The sculpture of the postembryonic whorls consists of sparse, low, narrow axial ribs that are most distinct below the periphery of the last 2 whorls and continue undiminished into the umbilicus. There are 23 ribs on the penultimate whorl. Spiral sculpture is absent. The aperture is nearly circular and bears a double peristome. The opening of the aperture faces obliquely upward. The outer peristome consists of several high laminations and is uniformly wide except where it is broadly expanded over the apex of the shell (Fig. 1, E). The inner peristome is thicker and flares out nearly uniformly, except where it is appressed to and extends slightly forward on the penultimate whorl.

Measurements of the holotype: height of shell, 0.97 mm; major width, 1.07 mm; minor width 0.71 mm; aperture width, 0.53 mm; aperture height, 0.50 mm. Measurements of 3 paratypes: height, 0.97, 0.99, 0.97 mm; major width, 1.06, 1.10, 1.01 mm; minor width, 0.74, 0.83, 0.74 mm; aperture height, 0.53, 0.51, 0.48 mm.

Type-locality.—BORNEO: Sarawak; Fourth Division; limestone hill on the trail from the Niah River to Niah Cave, Batu Niah. The cave is reached by traveling down river from Niah for a distance of about 3 km and then northeast for a distance of about 4 km. The type-locality is on the trail about midway between the river and the cave. The specimens comprising the type-series were recovered from dirt removed from the umbilicus of 3 specimens of *Cyclophorus talboti* Godwin Austen. Holotype: UF 24836; collected 4 November 1976 by William I. Holzmark. Paratypes: UF 24837 (2), Sarawak Museum, Kuching (1); same data as the holotype.

Opisthostoma (O.) *brachyacrum* new species

Fig. 2, A-E

Diagnosis.—A species of the subgenus *Opisthostoma* with a short raised apex and a recurved body whorl that ascends the spire to the shoulder of the penultimate whorl. The aperture faces posteriorly and bears a double peristome, the outer being only moderately wider than the inner. The sculpture consists of sparse feeble axial ribs, and very thin raised spiral threads.

Shell.—Minute, about 0.9 mm high and slightly wider in major diameter, with about 4 whorls. The umbilicus is open and circular and is about 0.2 times the minor diameter of the base. The spire is abbreviate cylindrical with a shortly elevated apex that consists of about 2 whorls. The embryonic shell consists of 1.5 whorls that are distorted obliquely to the shell axis. The shell is widest at the third (penultimate) whorl and is slightly narrower below. The body whorl is slightly constricted below the aperture and then enlarges again just behind the peristome. The body whorl is strongly recurved upward and backward along its last quarter and ascends the spire to the shoulder of the penultimate whorl against which the recurved portion is appressed. The embryonic whorls are sculptured with minute granules. The postembryonic whorls bear very low widely spaced axial ribs. The ribs are nearly uniform in height and width over the surface of the shell and continue into the umbilicus. There are 23 ribs on the penultimate whorl. Ribbing is absent in the vicinity of the constriction on the body whorl. Fine, delicate, spiral threads are present between the ribs on the last part of the body whorl but are not obvious elsewhere, perhaps due to the worn condition of the holotype. The aperture is circular and is appressed against the penultimate whorl. It

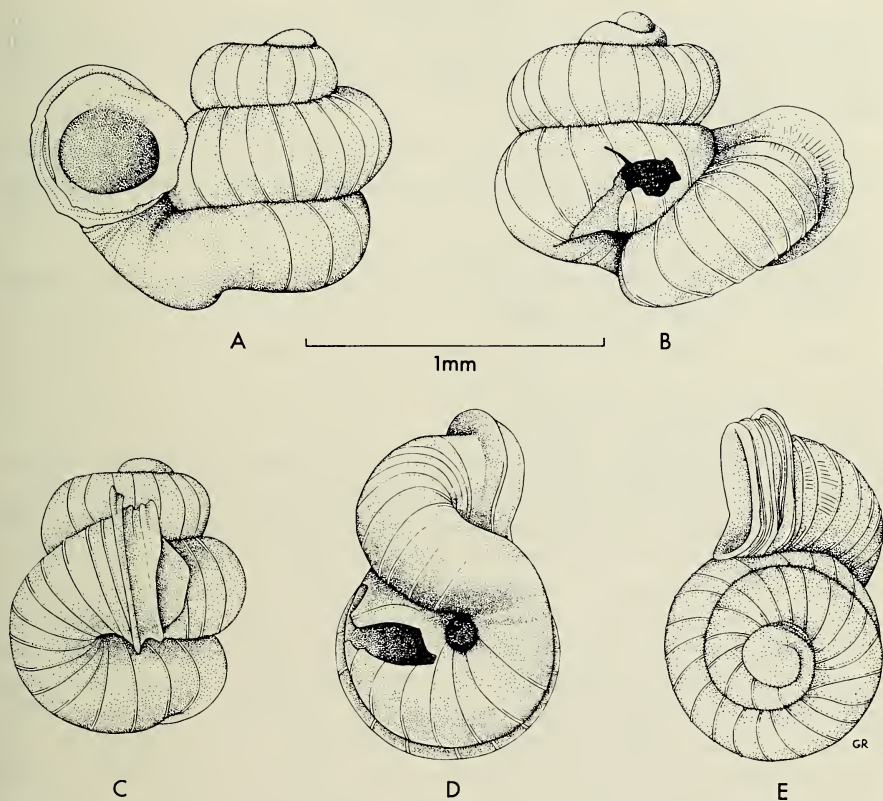


Fig. 2. *Opisthostoma brachyacrum*, Holotype.

lies in a plane facing posteriorly slightly oblique to the shell axis and bears a double peristome. The outer peristome consists of several fused lamella. It is slightly wider than the inner peristome and is nearly uniformly expanded. The inner peristome is trumpet-shaped and is nearly equally expanded around the aperture. The parietal wall of the inner peristome is appressed against the penultimate whorl and extends forward at that point.

Measurements of the unique holotype: height of shell, 0.93 mm; major width, 1.16 mm; minor width, 0.72 mm; aperture width, 0.46 mm; aperture height, 0.46 mm.

Type-locality.—BORNEO: Sarawak; Fourth Division; limestone hill on the trail from the Niah River to Niah Cave, Batu Niah. The holotype bears the same detailed locality information as that given above for *O. holzmarki*. Holotype: UF 24837; collected 4 November 1976 by William I. Holzmark.

Relationships

Jutting (1952, 1961) divided the Malayan *Ophisthostoma* (*s.s.*) into five species groups based upon the shape of the shell. This scheme is as follows, with slight amendments.

- Group I. Shell with a flat top and a recurved distal part of last whorl.
- Group II. Shell with a flat top and a straight [vertical] part of last whorl.
- Group III. Shell with very oblique whorls.
- Group IV. Shell with a somewhat elevated spire [and a recurved distal part of last whorl].
- Group V. Shell with strong remote ribs standing out like a crown.

The two new species described herein clearly belong to Group IV. This group also contains the following:

O. aspastum Jutting, 1951—Celebes; *O. deccanense* Beddome, 1875—India; *O. fairbanki* Blanford, 1866—India; *O. hemistreptum* Jutting, 1961—Malaya; *O. javanicum* Jutting, 1932—Java; *O. macrostoma* Blanford, 1869—India; *O. nilgircum* Blanford and Blanford, 1861—India; *O. paranomon* Jutting, 1952—Malaya; *O. pauluciae* Crosse and Neville, 1879—Perak; *O. perlisanum* Jutting, 1961—Malaya; *O. supinum* Jutting, 1962—Cambodia; *O. tenerum* Jutting, 1952—Malaya; *O. holzmarki* and *O. brachyacrum* appear to be members of an indigenous Bornean subgroup. They are distinguished from all other species in Group IV, as well as species in other groups, by their feeble, widely spaced axial ribs. *O. holzmarki* is also unique within the subgenus because of the callused encapsulating shield the outer peristome forms over the apical whorls, and by the short longitudinal groove in the last whorl. *O. brachyacrum* has a less modified body whorl than does *O. holzmarki*, and is more similar in shape to other Group IV species. In this respect it resembles *O. aspastum* from Celebes but is readily distinguished from the latter by its sculpture. *O. aspastum* has closer and stronger axial ribs and has distinct spiral sculpture over the entire surface of the whorls.

Opisthostoma (*s.l.*) contains three subgenera, *Geothauma*, *Plectostoma* and *Opisthostoma* (*s.s.*). *Geothauma* is endemic to north Borneo and some satellite islands. *Plectostoma* is recorded from India, Vietnam, the Malay Peninsula and north Borneo. *Opisthostoma* (*s.s.*) is known from India, Vietnam, the Malay Peninsula, Celebes, Borneo and Java. The Group IV species complex of *Opisthostoma* (*s.s.*) has a wider geographic distribution than does any of the other species groups or than do the other subgenera. The geographic limits of the Group IV complex are coincidental with the known geographic range of the genus.

Prior to now *Plectostoma* and *Geothauma* were the only subgenera of

Opisthostoma known from Borneo. With the addition of the two new species described above north Borneo becomes the only geographic area in which all three subgenera are known to occur. In Borneo *Plectostoma* contains fifteen described species and *Geothauma* contains ten (a recent tabulation of these is given in Jutting, 1952:57-62). Some of these have been recorded on two or more occasions and many other minute operculate snails of the genera *Arinea*, *Alycaeus*, *Diplommatina* and *Georissa* have been described from the island. It is surprising that prior to now *Opisthostoma* (*s.s.*) has not been found in Borneo. The apparent scarcity of this subgenus on Borneo probably is due to the extremely minute size of its species and not to the infrequency of their occurrence.

Acknowledgments

I wish to express my gratitude to Mr. William I. Holzmark of Sarasota, Florida, for the specimens treated in this paper. The illustrations comprising Figs. 1 and 2 were made by Ms. M. Glen Rogers. Much credit is due to her for the exactness of these illustrations.

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